



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,164	05/25/2007	Yong-Su Lee	1403-07 PCT US	2561
66547 7590 11/02/2009 THE FARRELL LAW FIRM, LLP 290 Broadhollow Road Suite 210E Melville, NY 11747				
EXAMINER				
NGUYEN, LEON VIET Q				
ART UNIT		PAPER NUMBER		
2611				
MAIL DATE		DELIVERY MODE		
11/02/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/583,164

## Applicant(s)

LEE ET AL.

## Examiner

LEON-VIET Q. NGUYEN

## Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This office action is in response to communication filed on 7/27/09. Claim 6 has been cancelled. Claims 1-5 and 7-9 are pending on this application.
2. The indicated allowability of claims 3 and 6 are withdrawn in view of the newly discovered reference(s) to Holenstein et al (US20030199264). Rejections based on the newly cited reference(s) follow.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claim 3 recites the limitation " the saturation to RMS ratio ". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:  
  
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. **Claims 1, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Hereby referred to as AAPA) in view of Newell (US3678393) and Holenstein et al (US20030199264).**

Re claim 1, AAPA teaches an automatic gain control device in an orthogonal frequency division multiplexing system, comprising:

an energy calculator for calculating an energy of the input signal (page 2 lines 4-5);

a truncator for accumulating the calculated energies (page 2 line 5, it would be necessary to accumulate values to calculate an average), finding an average thereof (page 2 line 5), and generating a DC offset of the input signal (page 2 line 5, the converted average value to be compensated);

a subtracter for subtracting a predefined reference value from the DC offset, and outputting a signal (page 2 lines 6-7, taking the difference would require a subtracter); and

feeding the value output by the subtracter back so that the value output by the subtracter may be used for an automatic gain control (page 2 lines 6-8).

AAPA fails to teach a variable gain amplifier for controlling a gain of an input signal; and

an RC filter for feeding values back to the variable gain amplifier.

However Newell teaches a variable gain amplifier (I.F. amp 14 in fig. 1) for controlling a gain of an input signal (col. 1 lines 10-13, col. 2 lines 5-9) and an RC filter for feeding values back to the variable gain amplifier (RC circuit 21 in fig. 1, col. 2 lines 33-41).

Therefore taking the combined teachings of AAPA and Newell as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the features of Newell into the apparatus of AAPA. The motivation to combine Newell and AAPA would be to reduce the amplitudes of higher frequencies (col. 2 lines 33-41 of Newell).

AAPA also fails to teach an analog to digital converter for converting the input signal into a digital signal; a pulse density modulation signal generator for processing the signal output by the subtracter to be a pulse density modulation signal; and an RC filter for feeding the value of the pulse density modulation signal generator back.

However Holenstein teaches an analog to digital converter for converting an input signal into a digital signal (ADC 502 in fig. 6); a pulse density modulation signal generator (PDM in fig. 6) for processing the signal output by a subtracter (adder 602 in fig. 6 which performs subtraction) to be a pulse density modulation signal; and an RC filter (resistors 616 and capacitor 614 in fig. 6 which comprise an RC circuit) for feeding the value of the pulse density modulation signal generator back (feedback loop 506 in fig. 6).

Therefore taking the combined teachings of AAPA and Holenstein as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the features of Holenstein into the apparatus of AAPA. The motivation to combine Holenstein and AAPA would be to cancel DC offset (§10009 of Holenstein).

Re claim 4, the modified invention of AAPA teaches an automatic gain control device wherein the energy for the automatic gain control is calculated for a training symbol interval of the input signal (page 1 line 21 – page 2 line 3 of AAPA).

Re claim 7, all of the claim limitations have been analyzed and rejected with respect to claim 1. It would be necessary to have a method of using the apparatus as claimed in claim 1.

**3. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Hereby referred to as AAPA), Newell (US3678393) and Holenstein et al (US20030199264) in view of Chambers et al (US5901347).**

Re claim 2, the modified invention of AAPA fails to teach an automatic gain control device wherein the predefined reference value includes a reference power generated based on a saturation to RMS ratio for minimizing the bit error rate of the orthogonal frequency division multiplexing system.

However Chambers teaches an automatic gain control device (fig. 3) wherein the predefined reference value includes a reference power (AGC threshold 406 in fig. 4)

generated based on a saturation to RMS ratio (saturation level 402 in fig. 4) for minimizing the bit error rate of the orthogonal frequency division multiplexing system (col. 9 lines 10-13).

Therefore taking the modified teachings of AAPA, Holenstein and Newell with Chambers as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the features of Chambers into the apparatus of Newell, Holenstein and AAPA. The motivation to combine Chambers, Holenstein, Newell, and AAPA would be to maximize the dynamic range of a receiver (col. 9 lines 22-25 of Chambers).

Re claim 8, all of the claim limitations have been analyzed and rejected with respect to claim 2.

**4. Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Hereby referred to as AAPA), Newell (US3678393) and Holenstein et al (US20030199264) in view of Sayeed (US20020186799).**

Re claim 5, the modified invention of AAPA fails to teach an automatic gain control device wherein the energy calculator finds a summation of the square of the input signal, and outputs the same as energy.

However Sayeed teaches an automatic gain control device (§0008) wherein the energy calculator finds a summation of the square of the input signal (§0008, the sum of the squares of the OFDM samples), and outputs the same as energy (§0008, the energy measurements).

Therefore taking the modified teachings of AAPA, Holenstein and Newell with Sayeed as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the features of Sayeed into the apparatus of Newell, Holenstein and AAPA. The motivation to combine Sayeed, Holenstein, Newell, and AAPA would be to maintain signal quality and linearity (§0007 of Sayeed).

Re claim 9, all of the claim limitations have been analyzed and rejected with respect to claim 5.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on Monday-Friday, alternate Friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/  
Examiner, Art Unit 2611

/David C. Payne/  
Supervisory Patent Examiner, Art Unit 2611